Watersheds: **San Joaquin River, Eastside Sub-basin (Stanislaus, Tuolumne, and Merced River Watersheds and Farmington and Valley Floor Drainage Areas)**

Sampling Period: **January 2003 – April 2004**

Report Objectives:
1. Spatial and Temporal Trends;
2. Stakeholder Concerns;
3. Potential Beneficial Use Concerns;
4. Planning for future monitoring program design

KEY STATISTICS

Size of Eastside Sub-basin	*6,091 Sq Mi*
Number of sites Sampled	*38*
Number of Constituents measured	*26*
Samples Taken	*~6300*
Sample Frequency	*Weekly to Annual*

MESSAGE: **Twice per month water quality monitoring for minimum of twelve months identified both spatial and temporal trends in a drainage basin to the San Joaquin River.**

Site Locations:

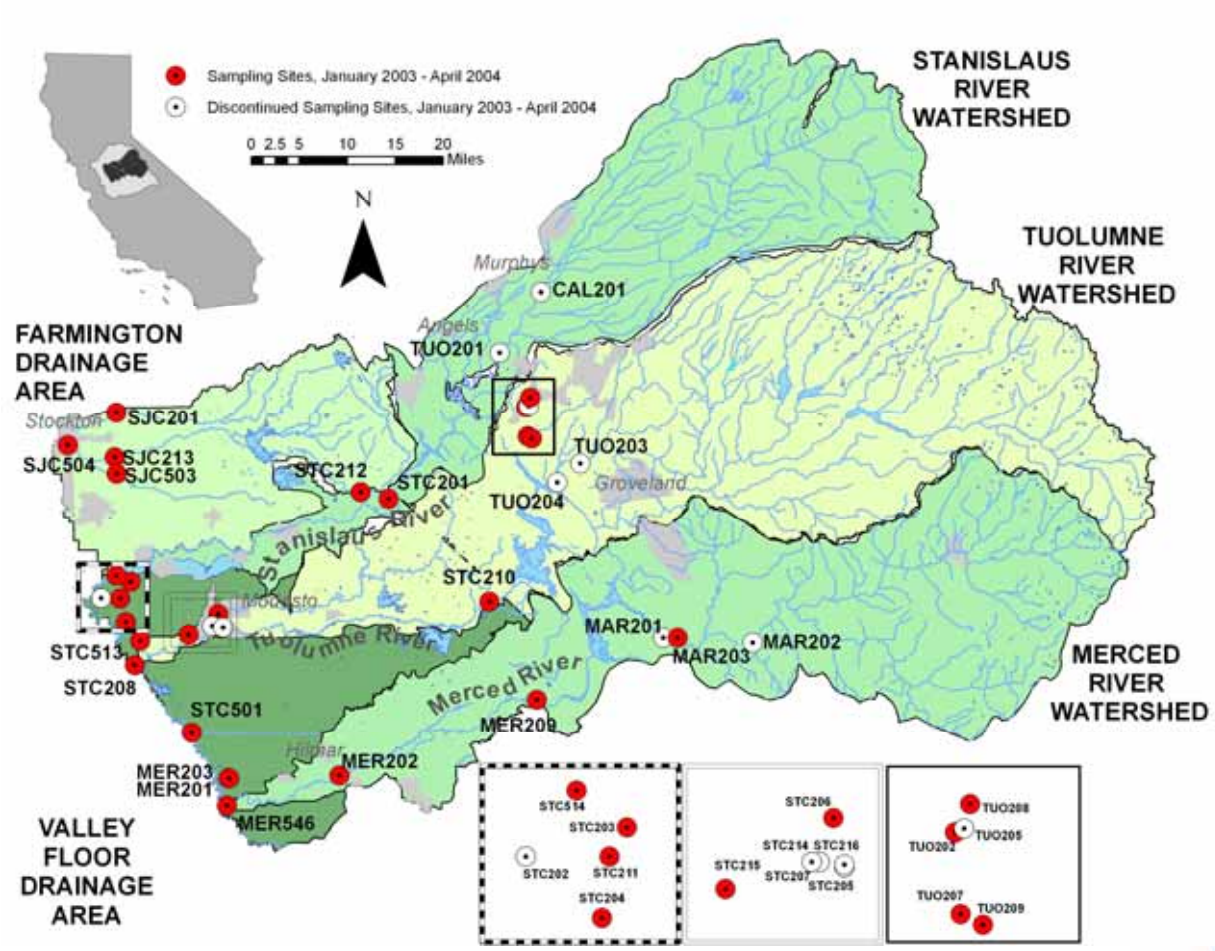

Table 1: Summary of Potential Beneficial Use Concerns: Eastside Basin of the San Joaquin River (January 2003 – April 2004)

Beneficial Use Indicator	Farmington Drainage Area	Valley Floor Drainage Area	Stanislaus Watershed	Tuolumne Watershed	Merced Watershed
Drinking Water					
Specific Conductivity (SC)		NA			
Total Organic Carbon (TOC)		NA			
Trace Elements	arsenic	NA		cadmium	
E. coli		NA			
Aquatic Life					
Water Column Toxicity	No Sample				
Temperature					
Dissolved Oxygen (DO)					
Trace Elements	copper	copper, zinc		copper	copper
pH					
Irrigation Water Supply					
Specific Conductivity (SC)					
Recreation (Swimming)					
E. coli					

X = One or more result(s) above a goal, objective, target or guideline
NA = MUN designation does not apply to constructed conveyance and holding facilities

WHAT IS THE MEASURE SHOWING?

The data gathered over a sixteen month period provides information on the spatial and temporal trends in water quality from January 2003 – April 2004 and preliminary indications on the potential beneficial use impacts on the San Joaquin River. Overall, discharges from all sub-basins had comparable temperature values and ranges. Concentrations and ranges for SC, turbidity, TOC, and *E. coli* were lowest at the three river inflows. For turbidity and *E. coli,* the Valley floor laterals were similar to the river inflows, and for SC, the Farmington site was similar to the river inflows, while the Valley Floor Drains consistently had higher results and were more variable for SC, turbidity, TOC, and *E. coli.* Seasonally, dips in SC corresponded to reservoir releases and spikes in turbidity, TSS, TOC, and *E. coli* occurred mainly after rainfall events and after irrigation flows. In evaluating stakeholder concerns, significant increases of SC, turbidity, minerals and trace elements were found downstream of a residential construction site in a rural community. Also significant increases of turbidity and *E. coli* were found downstream of the inflow to the Tuolumne River from an agriculturally dominated subwatershed. Table 1 identifies both indicators utilized and overall evaluation of potential beneficial use concerns.

WHY THIS INFORMATION IS IMPORTANT?

The San Joaquin River Watershed supports multiple beneficial uses (e.g. Drinking Water, Aquatic Life, Irrigation Water Supply and Recreation). Data collected as part of this study provided background water quality information for inflows to the San Joaquin River and was assessed in combination with other available data during the development of the Clean Water Act Sections 305(b) and 303(d) Integrated Report for the Central Valley Region (CVRWQCB, 2009), which assessed overall water quality within the Central Valley of California and also identified impaired waterbodies (water bodies not meeting their beneficial uses designations). The findings within this report can also help determine future program design by focusing resources toward identified concerns.

WHAT FACTORS INFLUENCE THE MEASURE?

Hydrology: The Eastside Basin is made up of two distinctly different water types: river watersheds, originating in the Sierra Nevada and are primarily snowmelt, and the Drainage Areas originating at the head of the lower watersheds by seepage and diversions from the rivers. The river upper watersheds and transition points to the lower watersheds provided opportunities to construct storage reservoirs to include Hetch Hetchy, New Melones, Don Pedro, and Lake McClure. The river lower watersheds and Drainage Areas are contained in the valley floor. The Drainage Areas are networks of drains and laterals, carrying supply and waste water.

Land Use: The upper watershed areas supported gold mining activities in the mid 1800's. More common now is timber harvest activities, as well as developed areas and recreation. The lower watershed area is dominated by orchards and row crops, as well as urban and rural communities.

Water Year Type: A Water Year begins 1 October and ends 31 September of the following year. Because of the timing of this study, January 2003 – April 2004, portions of Water Years 2003 and '04 were represented. The San Joaquin River Index, described in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (SWRCB, 1995) classified January – September 2003 "below normal" and October 2003 – March 2004 "dry".

TECHNICAL CONSIDERATIONS:

- Data source: Central Valley Water Board SWAMP website at http://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_studies/surface_water_ambient_monitoring/northeast_basin_information/northeastsites.shtml.
- *E. coli* is only an indicator of potential pathogens and does not necessarily identify an immediate health concern.
- For selected constituents (e.g. TOC, TSS, water column toxicity, trace elements, and minerals) limited funding only allowed monitoring for part of the 16 month sampling period.
- Public report and fact sheet are available at: http://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_studies/surface_water_ambient_monitoring/swamp_regionwide_activities/index.shtml

REFERENCES:

1. Central Valley Regional Water Quality Control Board (CVRWQCB). 2009. The 2008 Update to the 303(d) List and Development of the 2008 303(d)/305(b) Integrated Report. http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/impaired_waters_list/303d_list.shtml
2. State Water Resources Control Board (SWRCB). 1995. Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary.